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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,190	08/11/2006	Kazuhiko Minami	294259US40PCT	6074
22850 7590 06/29/2009 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER AFZAL, SARANG				
ART UNIT 3726		PAPER NUMBER		
NOTIFICATION DATE 06/29/2009		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/589,190

**Applicant(s)**

MINAMI ET AL.

**Examiner**

SARANG AFZALI

**Art Unit**

3726

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 18-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 20080916 & 20080811
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Inventor's Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election with traverse of Group I, claims 1-17 in the reply filed on 4/8/2009 is acknowledged. The traversal is on the ground(s) that "it appears that these claims according to the present invention are part of an overlapping search area and that a search for Claims 1-17 would necessarily include a search directed to the rest of the claims as well and this would not place a serious burden on the Examiner. This is not found persuasive because as noted in the restriction requirement mailed on 3/18/2009, the three groups of inventions lack the same or corresponding special technical features.

The requirement is still deemed proper and is therefore made FINAL.

***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: A METHOD FOR MANUFACTURING A TUBE FOR USE IN AN ALUMINUM HEAT EXCHANGER.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
5. Claim 1 recites the limitation "and Si content is 2 mass% or less" in line 6. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Wittebrood et al. (US 6,796,484).

As applied to claims 1, 5-8, 10-11 and 17, AAPA (specification, page 2, paragraphs 1-5 and page 2, paragraphs 1-4) teaches that within the art of heat exchanger manufacturing a tube core made of Al-Mn series aluminum alloy such as JIS 3003 is widely used. AAPA further teaches that it is well known in the art to employ a tube core made of Al alloy material in which Cu is added to Al alloy material to improve the heat resistance and pressure resistance of the heat exchanger tube. AAPA also teaches that it is well known technique in the art wherein Al-Si-Cu-Zn series alloy is

thermally sprayed on the tube core to form a brazing material layer thereon. In addition, the AAPA implicitly teaches that conventionally these heat exchanger tubes are made by extrusion molding.

AAPA does not explicitly teach that the Si content of the brazing material is 2 mass% or less.

However, Wittebrood et al. teach a well-known method for manufacturing brazing products used in making heat exchangers (col. 9, lines 1-2) wherein a brazing layer including silicon in an amount of 2 mass% is thermally sprayed on the core of a 3003 aluminum alloy (col. 1, lines 31-44).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of invention to have provided the AAPA's brazing material with a silicon content of 2 mass% as taught by Wittebrood et al., in order to provide a heat exchanger assembly with effective and high quality brazed joints.

Regarding the limitation in claim 5 of "Cu content is 0.05 mass% or less," AAPA teaches a well-known JIS 3003 aluminum alloy which inherently includes a Cu content of 0.05 mass%.

As applied to claims 2-4, AAPA in view of Wittebrood et al. teach the invention cited with the exception of explicitly teaching the claimed "range of 1 to 10 g/m<sup>2</sup> of Cu adhesion amount" (claim 2), the claimed "range of 1 to 20 g/m<sup>2</sup> of Zn adhesion amount" (claim 3) and the claimed "range of 0.4 to 50  $\mu$ m for average thickness" (claim 4).

However, employing the above claimed ranges in the method of AAPA/Wittebrood et al. would have been an obvious matter of design choice for one of ordinary skill in the art, since the Applicant has not disclosed that only the claimed ranges for Cu adhesion amount, Zn adhesion amount and average thickness of the sprayed layer provide any advantages, are used for particular purposes, or solve any stated problems. One of ordinary skill in the art, furthermore, would have expected applicant's invention to perform equally well with either the Cu and Zn adhesion amounts and average layer thickness as taught by AAPA/Wittebrood et al. or the claimed Cu and Zn adhesion amounts and average layer thickness because either one perform the same function of providing an effective means of applying and coating the heat exchanger tubes with brazing layers that would result in an effective and high quality brazed assembly.

As applied to claims 9, and 12-16, AAPA in view of Wittebrood et al. teach the invention cited with the exception of explicitly teaching the "arc thermal spraying" (claim 9), "Cu thermal spraying process for spraying Cu and Zn thermal spraying for process for spraying Zn" (claim 12), "Cu and Zn thermal spraying processes are done simultaneously" (claim 13), "Cu and Zn thermal spraying processes are done at different time points" (claim 14), "thermal spraying done by generating arc using a Cu alloy and a Zn wire" (claim 15), and thermal spraying is done in inert gas atmosphere (claim 16).

However, employing the above claimed processing steps in the method of AAPA/Wittebrood et al. would have been an obvious matter of design choice for one of ordinary skill in the art, since the Applicant has not disclosed that only the claimed arc thermal spraying, Cu thermal spraying and Zinc thermal spraying done simultaneously and at different time points, and thermal spraying done by generating arc using a Cu alloy and Zn wire and done in inert gas atmosphere, provide any advantages, are used for particular purposes, or solve any stated problems. One of ordinary skill in the art, furthermore, would have expected applicant's invention to perform equally well with either of the thermal spraying processes and steps as taught by AAPA/Wittebrood et al. or the claimed arc thermal spraying, Cu thermal spraying and Zinc thermal spraying done simultaneously and at different time points, and thermal spraying done by generating arc using a Cu alloy and Zn wire and done in inert gas atmosphere because either one perform the same function of providing an effective means of applying and coating the heat exchanger tubes with brazing layers made of different compositions (i.e. Zn, Cu) under suitable environment/conditions that would result in an effective and high quality brazed assembly.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SARANG AFZALI whose telephone number is (571)272-8412. The examiner can normally be reached on 7:00-3:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bryant can be reached on 571-272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sarang Afzali/  
Examiner, Art Unit 3726  
6/22/2009

/DAVID P. BRYANT/  
Supervisory Patent Examiner, Art Unit 3726